R E P O R T R E S U M E S

ED 014 730 CG 000 119

FACTORS IN EDUCATIONAL DECISIONS AMONG PUBLIC SCHOOL PUPILS.

BY- DOLE, ARTHUR A.

PUB DATE MAR 67

EDRS PRICE MF-$0.25 HC-$0.88 20P.

DESCRIPTORS- *EDUCATIONAL ATTITUDES, *EDUCATIONAL EXPERIMENTS, *DECISION MAKING, HIGH SCHOOL STUDENTS, *FACTOR ANALYSIS, VALUES, STUDENT INTERESTS, VOCATIONAL DEVELOPMENT, STUDENT MOTIVATION, RESEARCH, WHAT I WANT TO DO (INVENTORY), YOUR STUDY PROGRA. AND YOUR FUTU. (INV.), REASONS FOR COLLEGE (INVENTORY), INTER ITEM CORRELATION COEFFICIENTS, VARIMAX PROCEDURES

THROUGH FACTOR ANALYSIS, THE STRUCTURE OF SELF-REPORTED REASONS FOR SELECTING SECONDARY SCHOOL STUDY PROGRAMS WAS EXPLORED. MAJOR FACTORS AFFECTING EDUCATIONAL DECISIONS WERE STUDY TARGETS. SAMPLES OF PUBLIC SCHOOL PUPILS, WHO VARIED IN HETEROGENEITY, SEX, EDUCATIONAL LEVEL, LOCALE, SOCIOECONOMIC CHARACTERISTICS, AND ASPIRATIONS WERE SELECTED. THREE SEPARATE FACTOR ANALYSES WERE CONDUCTED ON THE BASIS OF SURVEY AND INVENTORY CHECKLIST RESPONSES. MAJOR GENERAL FACTORS (CONFORMITY, ACADEMIC VALUE, MATERIAL VALUE, ALTRUISTIC VALUE, SCHOOL INFLUENCE, INFLUENCE OF EXPERIENCE, SCIENCE INTEREST, AND HUMANITIES INTEREST) WERE IDENTIFIED AS AMONG THOSE CONTRIBUTING TO EDUCATIONAL DECISIONS IN THE SAMPLES. CERTAIN DECISION STRUCTURES BEFORE COLLEGE RESEMBLE FACTORS CONTRIBUTING TO COLLEGE ATTENDANCE. MANY FACTORS ARE ASSOCIATED WITH EDUCATIONAL DECISION MAKING. THE EIGHT MAJOR FACTORS ARE GENERALLY COMPARABLE TO FACTORS OBTAINED ON THE DETERMINANTS OF VOCATIONAL DECISION. EXCEPT FOR SEX, PERSONAL AND SOCIAL VARIABLES ARE NOT CLOSELY LINKED TO MOTIVATIONAL FACTOR STRUCTURES. THIS PAPER WAS PRESENTED AT THE AMERICAN PERSONNEL AND GUIDANCE ASSOCIATION CONVENTION, DALLAS, TEXAS, MARCH, 1967. (AF)

ED014730

Factors in Educational Decisions Among Public School Pupils

Arthur A. Dole[1]

University of Hawaii

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

March 1967

This paper was prepared for presentation at the Annual Convention of the American Personnel and Guidance Association, Dallas, Texas, March, 1967. The research reported herein was supported by the Hawaii State Department of Education and by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education and Welfare (CRP 2109). John M. Digman assisted in designing the factor studies described in this paper.

[1] On leave at Teachers College, Columbia University, 1966-67.

CG 000 119

Factors in Educational Decisions Among Public School Pupils

Arthur A. Dole

In general, vocational interests, values, socioeconomic characteristics, and abilities have been associated with educational decisions. (See especially Beezer & Hjelm, 1961; McClelland, Baldwin, Bronfenbrenner & Strodtbeck, 1958; Super, 1962; Stroup & Andrew, 1959; Flanagan, Davis, Daily, Shaycoft, Orr, Goldberg & Neyman, 1964; Cass & Tiedeman, 1960: and Gribbons & Lohnes, 1964.) As part of a large sample study of educational-vocational choices (Dole, 1965a), this research was concerned with exploring through factor analysis the structure of self-reported reasons for selecting a secondary school study program.

Of particular relevance to the present study is Spindler's (1955) classification of the values held by young people as either emergent or traditional. Also, as reviewed recently by Super (1962), various writers have proposed an intrinsic-reward-concomitant trichotomy or an intrinsic-extrinsic dichotomy of values. It is possible then that fairly simple reported motivations may account for vocational decisions. In contrast, Super (1962) after a factor analysis of 15 different work values together with a number of measures of intelligence, interest, adjustment, and achievement, indicated a more complex structure. For the 9th grade boys in the Career Pattern Study (N = 88) Super identified 4 value factors and 2 factors which could be classified as either values or interests. There were also 3 personality and adjustment factors and 1 achievement factor. Previously O'Connor and Kinnane (1961)

factor analyzed the Super Work Values Inventory and extracted 6 factors. In an earlier stage of the present research series Dole (1961) on a priori and logical grounds rejected a simple two or three value explanation of educational choice. The writer classified the reported determinants of educational choice as interests, values, and influences and hypothesized that these determinants, which combined in complex ways with personal and socioeconomic characteristics, were associated with educational decisions at various levels from elementary school to college. In the present study it was hoped primarily to identify some of the major factors in educational decisions. Because of an interest in common major factors comparability and generality would be stressed. The identification of such factors might prove valuable to guidance and curriculum specialists and to developmental theorists and would lay the groundwork for studies of constancy and inconsistency in educational progress. In addition, factor analysis might yield answers to the following questions:

1. How do factors obtained in public school samples compare with factors obtained in college samples?

2. Do two or three simple factors account for reported motivations or are there more complex structures?

3. How do determinant items classed as values, influences, and interests relate to one another?

4. How do obtained factors in educational decisions compare with factors in vocational decisions?

5. How do motivational variables relate in factor structure to selected personal and social characteristics?

Procedure

Subjects

Three samples were selected to vary in heterogeneity, sex, educational level, locale, socioeconomic characteristics, aspirations, etc.

1. The Hawaii General sample included 300 males and females enrolled in the 9th grade at Dole Intermediate School, Honolulu. Although predominantly from lower class urban neighborhoods, these adolescents represented a variety of national-ethnic and socioeconomic groups. They expressed a wide range of educational and vocational plans. Only 37 were interested in science as an educational specialization.

2. The Hawaii Science sample comprised 300 ninth grade males who were attending 36 intermediate schools throughout the state. These boys were selected from a large pool of subjects on the basis that they anticipated with considerable certainty that they would enter the secondary science study program in the following academic year, that they planned to continue on into college, and that they were the children or grandchildren of immigrants from Japan. This was considered a highly homogeneous group.

3. The Oakland sample included 1,199 boys and girls who were beginning their senior year in high school. The subjects attended three urban high schools in Oakland, California. The population of one of these schools (McLymonds) was predominantly Negro in ethnic origin; the population of the other two schools (Oakland High, Oakland Technical School) included substantial numbers of children whose fathers were in professional or managerial occupations (Dole, 1965b).

Surveys

The Hawaii General and Hawaii Science subjects were among participants in a state-wide survey of 9th grade pupils (N=7,627) conducted by school officials in collaboration with the Hawaii Department of Education (Dole, 1961). In Oakland, a project field assistant administered the survey to all seniors in attendance on a typical school day at three high schools. Standard group procedures were followed in administering all inventories. All replies were audited for completeness; individual and group interviews were conducted by the project staff with selected student samples to verify readability and the cooperation of respondents.

Instruments

The Hawaii General and Hawaii Science samples completed an inventory, What I Want To Do. This is a checklist designed to measure the value, interest, and influence determinants of secondary study program preference. Pupils are first asked, "When you go to high school you will have to choose from one of five kinds of study programs...Which one would you like to take?" The study programs (tracks, curricula) in Hawaii at the time of the survey were college preparatory science, college preparatory general, business occupations, technical, and terminal. In presenting the checklist of value determinants respondents are asked, "What are some of the reasons why you want the high school program you chose?" A general question similarly introduces the interest checklist and another the influence checklist.

The Oakland sample was administered Your Study Program and Your Future, a similar inventory also presented in checklist form. It differs from

What I Want To Do only in that additional items are included and that the reasons are presented in retrospective ("when you entered high school") rather than prospective form.

Evidence about the construction of these checklists, their test-retest reliabilities, suitability for the populations surveyed, administration to samples and concurrent and construct validities will be found elsewhere (Dole, 1961; 1965a, 1965b).

Variables

In selecting variables for inclusion in each of the three factor analyses, wherever the proportion of agreement with an item approached zero or 100 per cent the item was dropped. In the case of the homogeneous Science sample five determinant items and five personal-social variables were excluded on this basis.

Thus, in the analysis of the Hawaii General sample 39 determinant items from What I Want To Do and six personal-social items were selected for analysis. In the Hawaii Science analysis there were 34 determinant items from the same inventory and no personal-social items.

For the Oakland analysis, 47 items presented in Your Program and Your Future were determinants and 16 items were personal-social characteristics. To sum up, there were in all 34 determinant items worded identically but directed toward different educational decisions at different levels which were included in the two intermediate and one secondary analyses. Previously, these items had also been among those presented in Likert form to five college samples as reasons for the decision to attend college and had been assigned by a matching procedure to 13 major factors.

Before analyzing each personal-social item, a frequency distribution of the options was cast and the options were then collapsed into dichotomies by inspection on the basis of popularity and theoretical considerations. Thus, for the Hawaii general sample the dichotomies were male vs. female, Japanese vs. all other ancestries; science college preparatory study program vs. all other study programs, sureness about choice of program vs. uncertainty; anticipated change in educational-vocational plans vs. anticipated little or no change; and plans for college after high school graduation vs. all other immediate post high school plans (technical or special school, military service, marriage, employment, etc.).

For the Oakland sample this dichotomization procedure permitted the introduction of additional items measuring, approximately at least, economic disadvantage and minority group membership. For instance, McLymonds High School vs. Oakland and Oakland Tech; white collar vs. blue collar father; father completed 13 years of school vs. 0-12 years of school; grandfather born in Southern USA or another country vs. all other regions of USA; and lived in California 16 or more years vs. 0-15 years.

Factor Analyses

For the analyses inter-item correlation coefficients (phis) were computed for all possible pairs of the items. The three resulting correlation matrices were then subjected to factor analyses using the facilities of the University of Hawaii's Statistical and Computer Center.

In the case of the analysis of the Hawaii General sample, applying varimax procedures, six factors exhausted virtually all covariance leaving minimal residual correlations. Applying the same procedure to the Hawaii Science sample, five factors were found to account for the observed correlations. In the Oakland sample 21 factors were extracted.

Definition of Major Factors

Previously five college samples had completed an inventory, Reasons for College, which included many of the check-list items but presented in Likert form. As described in a forthcoming publication by Dole and Digman (in press), a matching procedure yielded 13 major factors in college attendance.

The factors obtained for the three public school samples were matched with the college factors according to general procedures used in the college study.

1. Select a college factor (Dole, 1965a) and note items which had been included in the three public school analyses.

2. Find a factor in the Oakland sample and note items with loadings of .30 and above corresponding to the items in a college factor.

3. Continue matching factors in Hawaii General and Hawaii Science samples.

4. Review factors in each sample for items with loadings from .15 to .29.

If possible each item was assigned to but one major factor by inspection. Since this procedure demanded personal judgment, the allocation of items to major factors was reviewed by a consultant (John M. Digman).

Additional Factors

Additional factors were those which remained after the major factors had been identified or were alternate combinations. At this point, loadings on the personal-social items were inspected and each personal-social item was assigned to a major or additional factor as appropriate. The additional factors were named on the basis of the logic of their content.

Results and Discussion

Major Factors

The results of the three factor analyses are presented elsewhere in detail (Dole, 1965a). As shown in Table 1, by following the matching procedure the 34 determinant items were allocated among eight major factors. In the table it may be seen that the major factors were titled Conformity, Academic Value, Material Value, Altruistic Value, School Influence, Influence of Experience, Science Interest, and Humanities Interest.

Insert Table 1 About Here

In the far right column under the college factor heading the roman numeral represents one of the 13 major factors previously identified on the basis of five factor analyses of college freshmen and seniors with males and females treated separately. It will be recalled that these factors provided a major basis for the definition of factors and the assignment of items to the factors in public school educational decisions. In the remaining columns the roman numbers to the right of each loading identify a subfactor extracted in one of the three samples. Thus, three items from the conformity factor (Roman III in the college study) -- prestige, parents, and relatives -- loaded above 15 on Roman II among Hawaii General pupils, IV among Hawaii Science ninth graders, and, except for prestige, on Roman XVIII among Oakland seniors. Incidentally, the assignment of Roman numbers to subfactors was entirely arbitrary. The asterisk to the left of parents and of relatives indicates that on <u>all</u> analyses, including the five college equamax analyses, these two items always loaded to a significant extent on the <u>same</u> subfactor and more than on any other subfactor. The fact that 15 of the 34 determinant items, slightly less than half, are starred suggests considerable generality

TABLE 1

MAJOR SELF-REPORTED FACTORS IN EDUCATIONAL DECISIONS

Factor	Hawaii loading		Oakland loading	College factor
	General	Science		
Conformity				
Value of prestige . . .	-30 II	-29 IV		III
*Influence of parents. .	-40 II	-60 IV	-27 XVIII	III A
*Influence of relatives.	-35 II	-29 IV	-37 XVIII	III A
Academic Value				
Influence of classes. .	-39 II	-32 V		V
Value of aptitude . . .	-34 II	-50 V		V
*Value of specialization	-39 II	-30 V	-22 XIX	V
*Value of satisfaction .	-47 II	-41 V, 42 III	-26 XIX	V
Interest in words . . .	-32 II			XIII
Interest in ideas . . .	-31 II	33 III	-26 XIX	XIII
Material Value				
Value of practicality .	-45 II		20 VII	VI
*Value of security . . .	-30 II	-27 V	31 VII	VI
*Value of potential income	-45 II	-16 V	51 VII	VI
Value of independence .	-43 II		21 VII	VI
*Value of advancement .	-43 II	-30 V	40 VII	VI
Altruistic Value				
*Value of serving others	-45 IV	26 III	17 XVI	VII
*Value of self-improvement	-29 IV	47 III	19 XVI	VII
*Value of parenthood . .	-23 IV	42 III	28 XVI	VII
*Interest in children and youth	-37 IV	a	44 XVI	VII
School Influence				
*Influence of teacher. .	-19 II	-32 II	-20 XVIII	VIII
Influence of counselor.		-61 II	-22 XVIII	VIII
Influence of tests. . . .	-38 II			VIII
Influence of career day	-26 II	-61 II		XI

(Table continued next page)

Note--Loadings below 15 not reported in this table. Decimal points omitted. Roman numbers to right of each loading identify factor obtained in subanalysis. (See Dole, 1965a)

* Significant loading, on all factor analyses.

a This item was not included in the analysis.

TABLE 1 (continued)

MAJOR SELF-REPORTED FACTORS IN EDUCATIONAL DECISIONS

Factor	Hawaii loading		Oakland loading	College factor
	General	Science		
Influence of Experience				
Influence of work experience	-23 IV			IX
Influence of movies and TV	-26 IV	48 III	33 XIII	IX
Influence of people in field			28 XIII	IX
Interest in work with adults	-27 IV	32 III		IX
Science Interest				
*Influence of hobby . .	32 I	33 III	-33 XIV	X
Influence of free time		44 III	-30 XIV	X
Interest in machines .	56 I	34 III		XI
*Interest in numbers. .	19 I	-38 V	-19 XIV	XI
*Interest in science. .	28 I	-33 V	-41 XIV	XI
Interest in plants . .	15 I	28 III	-46 XIV	XI
Male vs. female	76 I	a	-20 XIV	a
Humanities Interest				
Interest in music	-25 II	64 I		XII
Interest in art	-21 II	75 I	-42 XIX	XII

and substantiality for these factors. On the other hand, there are, admittedly, some gaps, ambiguities, and possible misfits.

By reading down the college factor column it may also be noted that the item content of the major factors among the public school samples in five instances (Conformity, Material, Altruistic, Experience and Humanities) included only items from the like-named college factors; and in three instances (Academic, Scientific, School Influence) items from two college factors were combined.

When the matching procedure was applied to the items of the six subfactors extracted in the Hawaii General analysis, only three of subfactors (I, II, and IV) accounted for all items, as may be seen by reading down the Hawaii General column in Table 1. The remaining three subfactors were assigned to additional factors which will be discussed in Table 2. That is to say, subfactor II showed loadings on items which were allocated among five different major factors (Conformity, Academic Value, Material Value, School Influence, and Humanities Interest) and items from subfactors I and IV were assigned to the remaining three major factors. In the more homogeneous Hawaii Science boys items loading highest on the five subfactors extracted were divided among eight major factors.

In the Oakland sample, items loading on six subfactors were assigned to eight different major factors. By consulting the Oakland column it may be noted that items from subfactor XVIII were divided among two major factors, Conformity and School Influence, as was true of subfactor XIX (Academic Value and Humanities Interest). Items from the four other subfactors paralleled most of the items assigned previously to college major factors.

Thus the intermediate school samples showed fewer distinctive major factor structures than did the high school seniors and college students.

This research was, of course, designed to identify common factor structures with maximum generality across educational levels rather than to compare educational levels. However, it seems quite reasonable to suspect that factor structures probably increase in complexity with educational progress. A tentative explanation, disregarding for purposes of this discussion the possibility of artifacts in measurement, is that for most intermediate students the determinants of an unconsummated educational choice are fairly vague. With secondary school and post-high school may come the distinctions--the separation into clearer categories. It may be that, as the young person develops, the necessity for choice, for commitment to a particular specialization in high school, forces him to pattern his values, interests, and influences more logically.

Viewed generally rather than developmentally, do the obtained eight major factors ring true? Except for Conformity the a priori classification of determinants into interests, values and influences was retained but further subdivided. In fact, but three of the eight major factors--Material Value, School Influence and Humanities Interest--included only items from one a priori classification. The interest-value-influence classification was retained more out of convenience than out of a strong theoretical commitment. It seems reasonable that some students would prize the intrinsic satisfactions in education as represented by Academic Value but that it may not emerge as a factor distinct from Material Value until after grade 9. Influences can be divided into, first, the officials and planned events (School Influence) and, secondly, the more casual, vicarious events (Experience). A Science Interest factor fitted comfortably with the results of pilot studies and with interview impressions. The two item Humanities Interest factor was fairly distinct. Finally, Conformity (other direct-

edness?) perhaps represents the pattern of those who admit that they make their decisions as they think is expected of them. The separation of Conformity from School Influence may have been arbitrary.

The obtained factors resemble but do not completely duplicate factors identified in vocational studies. Thus, Material and Altruistic Value factors were identified by O'Connor and Kinnane's (1961) analysis of the Super Work Values Inventory. It is well known that Scientific is one of the scales of the factorially derived Kuder Preference Record. Conformity may be consistent with Super's (1962) factor 6, Other vs. Inner Direction. The School and Experience factors resemble Tyler and Sundberg's (1964) choice strategies.

One of the research questions concerned the relation of personal and social variables to the motivational variables. Of the personal-social characteristics introduced only one (male) was identified as a major component of major factors. On Science Interest the male characteristic had a loading of .76 in the Hawaii General analysis and of .20 in the Oakland analysis. Also on Altruistic Value male sex loaded .36 on the Oakland analysis.

Up to this point, then, we have identified at least eight major factors through a matching procedure. They emerged most clearly of the various subfactors in diverse samples. Although fewer in number they resembled the college factors. The interest-value-influence classification seems to have limited utility. Confidence in the structure of these reported reasons for educational decisions is strengthened by certain general resemblances to the results of other factor analyses on quite different populations involving the determinants of vocational decision; and except for the link between male sex, Science Interest, and Altruistic Value, the eight major factors were independent of social-personal variables in structure.

Interpretation of these factors should be limited, however, by noting that the Type I error in design was deliberatly introduced. As the price for identifying major factors of maximum potential generality, some valid and important factors in educational decision have undoubtedly been sacrificed. If more items, or items sampling other important motivations had been presented to the three public school samples, other important major factors would have emerged. Also since the definition of the eight major factors rested on a personal judgment, another investigator might have varied somewhat in the number of major factors defined, the allocation of items to factors and factor titles.

Another limitation is that items relating to the college decision may have been overrepresented in the inventory. Interviews and open-end techniques, first applied in pilot studies to 6th and 9th grade samples and to college freshman, shaped the construction of What I Want To Do. (Dole, 1961). A number of items which were not included in What I Want To Do were later identified through interviews as pertinent at the secondary level and were added to Your Study Program and Your Future.

Insert Table 2 About Here

Additional Factors

Tables 2 and 3 which present additional factors illustrate the point that the eight major factors do not by any means exhaust factors in educational decisions. They also indicate some alternative item groupings and provide further evidence on the relationship between motivational variables and selected personal-social variables. As shown in Table 2, seven additional factors were identified with loadings in the three public school analyses. These were named Sex Role, College-Bound, Uncertainty, Avocational Interest, Anti-Science, Economic Security, and Interest in Adults.

TABLE 2

ADDITIONAL FACTORS IN
EDUCATIONAL DECISIONS

Factor	Hawaii loading		Oakland loading
	General	Science	
Sex Role			
Male	76 I	a	-36 XVI
Interest in machines	56 I	34 III	-16 XVI
Interest in children and youth	-47 I	a	44 XVI
Influence of hobby	32 I	33 III	
Interest in food	-29 I	a	39 XVI
Value of parenthood		42 III	28 XVI
Interest in words	-29 I	20 III	15 XVI
Interest in science	28 I	21 III	
Interest in plants, animals	15 I	28 III	
Interest in art	17 I	50 III	
Interest in music		35 III	17 XVI
Interest in work with adults		32 III	16 XVI
Interest in work with ideas		33 III	
Value of satisfaction		42 III	
Value of independence		58 III	15 XVI
Value of income	18 I	28 III	
Value of security	16 I	23 III	
Influence of movies, TV		48 III	
Influence of work experience	23 I	20 III	
Influence of free time activities		44 III	
College Bound			
Planned on college after high school	54 III	a	56 XX
Preferred science pre-college study program	51 III	a	a
Preferred pre-college study program	a	a	58 XX
Anticipated changing very little or not at all in ideas about "what you will like to do 10 years from now."	38	a	a
Interest in science	28 III	a	19 XX
Influence of friends	-30 III		
Science profession as goal	a	a	31 XX
Father employed white collar job	a	a	20 XX

(Table continued next page)

Note--Criteria for inclusion in this table: 30 on one survey or 15 on two surveys. Decimal points omitted. Roman numbers to right of each loading identify factor obtained in subanalysis (See Dole, 1965a).

[a] This item not included in analysis.

TABLE 2 (Continued)

ADDITIONAL FACTORS IN
EDUCATIONAL DECISIONS

Factor	Hawaii loading		Oakland loading
	General	Science	
Uncertainty			
"Sure" or "Sure, but may change my mind about study program	-48 V	a	
Interest in food	39 V	a	-15 VI
Influence of random choice	31 V	a	-27 VI
Value of fastest path to diploma		a	-41 VI
Value of easy courses		a	-40 VI
Avocational Interest			
Interest in art	-21 II	50 III	
Interest in music	-25 II	35 III	
Influence of hobby		33 III	-35 XIX
Interest in ideas	-31 II	33 III	-26 XIX
Value of satisfaction	-47 II	42 III	-26 XIX
Value of self-improvement	-31 II	47 III	-16 XIX
Value of specialization	-39 II	29 III	-22 XIX
Influence of free time activities	-15 II	44 III	-25 XIX
Influence of teacher	-19 II	17 III	-25 XIX
Anti-Science			
Professional occupational goal in other than science	a	a	54 X
Professional occupational goal in science	a	a	-50 X
Interest in words	-32 II	-117 I	29 X
Interest in science	-31 II	a	-24 X
Security			
Value of security	37 VI	-26 II	-21 XII
Influence of career day	-33 VI	-61 II	-18 XII
Value of income	20 VI	-15 II	
Value of advancement	21 VI	-49 II	
Interest in work with adults	18 VI	-17 II	
Value of self-improvement		-33 II	
Value of parenthood	24 VI	-22 II	
Interest in numbers		52 II	-30 XII
Interest in music		-34 II	

(Table continued next page)

TABLE 2 (Continued)

ADDITIONAL FACTORS IN
EDUCATIONAL DECISIONS

Factor	Hawaii loading		Oakland loading
	General	Science	
Influence of tests			-41 XII
Value of aptitude for program			-40 XII
Japanese ancestry	27 VI	a	a
Interest in Adults			
Interest in adults	-17 V	32 III	40 XI
Influence of teacher	-20 V	17 III	17 XI
Interest in ideas		33 III	25 XI

The factor, Sex Role, confirms the powerful influence of sex affiliation in educational decision (Dole, 1964). The overlap with Science Interest has already been noted.

An extremely important conclusion in terms of the overall emphases of these studies is suggested by the College-Bound factor. Apparently, of all determinant checklist items treated, only interest in work with science accounts for the factor structure of college aspiration. The other items with high loadings on the College-Bound factor are all personal-social characteristics similar to those background characteristics which have been associated with college attendance in other studies. As might be expected, College-Bound students were most likely to be found in college preparatory study programs, to express scientific professional goals, and to be the children of fathers in white collar jobs.

The additional factor which has been titled Uncertainty seems congruent with a clinical impression of educational alienation peculiar to certain adolescents who rarely persevere to college. The four determinant items were excluded from the college factor analyses because they failed to meet minimum standards of popularity. That is, few college students rated them as important in deciding to attend college.

Avocational Interest represents an alternative grouping of variables. It combined two items of the college avocational interest factor (hobby and free time--not shown in Table 2) and two from the Humanities Interest factor (Table 2) with a miscellany of other items.

One factor may represent an Anti-Science Interest. However, this supplementary factor may have emerged as an artifact in part of varying procedures in treating science-related items when constructing instruments, selecting samples, and dichotomizing options.

It might be noted that observers have frequently commented on the emphasis which Hawaii's Japanese place on economic security. The last factor presented in Table 2, Interest in Adults, may represent an endorsement by public school children of determinants which are consistent with conceptions of approaching maturity.

Insert Table 3 About Here

Oakland Factors

In Table 3 ten more additional factors with loadings in the Oakland analysis are identified. As indicated many of the items comprising these ten factors were not presented to the two ninth grade samples and require interpretation in terms of the special conditions of the Oakland survey (Dole, 1965b).

In the Oakland study, items were introduced to test the relations of economic disadvantage, Negro racial status, opinions about guidance procedures in program selection, time of study program decision, and years of residence in state to the factorial structures underlying educational decisions. Except for the College-Bound factor in Table 2, most of these items were not linked to items used in the other analyses. Most were independent of the major factors and of the additional factors presented in Table 2.

As anticipated an Economic Disadvantage factor could be identified. From observation in Oakland it had seemed highly probable that race would be associated with indices of socioeconomic status. The variable McLymonds High School, which indicated high probability of Negro ethnic background, was indeed associated factorially with lack of parental education, blue collar occupation, and Southern family origin. Loadings of this variable on other factors will be reviewed separately after the nine other additional factors extracted in the Oakland analysis have been considered.

Dole
APGA

TABLE 3

ADDITIONAL FACTORS IN EDUCATIONAL DECISIONS OF

OAKLAND SENIORS

Factor	Loading
Economic Disadvantage (V)	
Attend McLymonds High School vs. Oakland and Oakland Tech[1]	34
Father completed 13 or more years school vs. 0-12 years[1]	-49
Father employed in white collar job vs. blue collar[1]	-49
Grandfather born USA except South vs. South, or foreign country[1]	-37
Native son (VIII)	
Lived in California 16 or more years vs. 0-15 years[1]	41
Value of achievement[1]	-47
Inventory avoidance (IX)	
Influence of some other person not given here[1]	-44
Influence of some other value not given here[1]	-36
Influence of some other interest not given here[1]	-40
Inventory resistance (XV)	
Interest in none of above[1]	55
Influence of none of the above[1]	40
Value of none of above[1]	27
Influence of hobby	-33
Guidance (I)	
In choosing h.s. study program, h.s. helped "great Deal" and "more than enough" vs. satisfactory or less help[1]	-35
Influence of intermediate school classes in program choice	-36
Early Decision (III)	
Chose h.s. study program upon entering grade 10 vs. before grade 10	-36
Program change in h.s. vs. no change	-23
Specialization (XVII)	
In "what you will like to do 10 years from now," anticipated changing "very little" or "not at all" vs. "very much", "somewhat" or "don't know"	-33
Value preparation for specialization	-31
Independence (II)	
Value of independence	-30
Work experience (IV)	
Influence of work experience	40
Program dependence (XI)	
Study program chosen by "me and others," chosen "for me," or "I had no say at all" vs. "entirely" or "pretty much by self"[1]	-43

Note— Criteria for inclusion in this table. Loading 30 or above or loading higher than on any other factor. Decimal points omitted.

[1] This item not presented to 9th grade samples.

These extra Oakland factors seem to make reasonable sense. As suggested by Native Son, long residence in California is associated with decreased tendency to check achievement as a reason for study program choice. Presumably it is the newcomers who in pioneering tradition are concerned with making good.

Inventory avoidance and Inventory Resistance may represent two distinct response sets to the check lists--"I'm not going to tell you," and "Nothing here shakes me." In the factor, Guidance, negative feelings toward high school guidance services were combined with a denial of influence by intermediate school upon study program choice.

The emergence of an Early Decision factor is consistent with the overall findings of this research series. Those students (about three-fifths of the group) who maintained the same secondary school program throughout high school tended quite logically to report that this decision was made early but, like those who said that they had changed their program, evidence no strong loading on any of the reported determinant factors. Students who do not value specialization are likely to anticipate change in their interests. Independence, Work Experience, and Program Dependence emerged as separate factors. For each only one item exceeded a loading of .30.

McLymonds

A further consideration of the item, McLymonds High, was promised in terms of its loadings on the 21 factors. Beside its significant loading on Economic Disadvantage as previously presented in Table 3, McLymonds loaded -25 on Program Dependence, -17 on College-Bound, and -16 on Native Son. (The latter loadings are significant statistically although, of course, they do not meet the criteria for inclusion in Table 2 or 3.) In other words,

apparently Negro students in this sample were less likely to respond favorably to items associated with college intention, less likely to be born in the state, more likely to express a desire to get ahead and more likely to feel that they were placed in an educational program rather than choosing it for themselves. This interpretation is supported by an item analysis comparing the three Oakland High High Schools (Dole, 1965b).

Conclusions

Eight major factors then have been identified as among those contributing to educational decisions in three diverse samples of public school pupils. The method of definition stressed the generality of these major factors; they are not necessarily inclusive. The three analyses reported here support also the following conclusions:

1. Certain decision structures before college, although perhaps more primitive, resemble some of the factors which contribute to college attendance.

2. Consistent with Super's findings about vocational values, many factors (in the present instance 8 major factors and various additional factors) rather than two or three value classifications are associated with educational decision making. Dichotomous and trichotomous explanations seem insufficient.

3. The logical classification of determinant items into values, influences, and interests appears constraining. A further subdivision was necessary. Is it possible that preoccupation with vocational <u>interest</u> in guidance practice has led to the neglect of other determinants?

4. The eight major factors are generally comparable to factors obtained on the determinants of vocational decisions.

5. Except for sex, personal and social variables are not closely linked to motivational factor structures. The point here is that reported determinants are distinguishable from demographic variables although both are important in the educational-vocational decision process.

References

Beezer, R. H. & Hjelm, H.F. Factors related to college attendance. Washington: U.S. Department of Health, Education and Welfare, 1961.

Cass, J.C. & Tiedeman, D.V. Vocational development and the election of a high school curriculum. Personnel and Guidance Journal, 1960, 38, 538-545.

Dole, A. A. Follow-up studies of the determinants of educational-vocational choices. Cooperative Research Project No. 2109. Washington: U. S. Department of Health, Education and Welfare, 1965(a).

Dole, A.A. Determinants of secondary school program reported by Oakland, California, seniors. Field Laboratory in Human Behavior. Occasional Paper 5. Honolulu: University of Hawaii, 1965 (b)

Dole, A.A. Is motivation for college associated with later withdrawal. Paper presented to the American Personnel and Guidance Association at Washington, D.C., April, 1966.

Dole, A.A. Reported determinants of educational choice. Personnel and Guidance Journal, 1964, 42, 564-561. (a)

Dole, A.A. Sex as a factor in the determination of educational choice. Journal of general Psychology. 1964, 71, 267-278. (b)

Dole, A.A. A study of values as determinants of educational-vocational choices in Hawaii. Cooperative Research Project 757. Honolulu: Hawaii State Department of Education, 1961.

Dole, A.A. & Digman, J.M. Factors in college attendance. Journal of applied Psychology, in press.

Flanagan, J.C., Davis, F.B., Dailey, J.T., Shaycoft, M.F., Orr, D.B., Goldberg, I., and Neyman, C.A. The American high school student. Cooperative Research Project No. 635. Pittsburgh: Univer. Pittsburgh, 1964.

Goldsen, R.K., Rosenberg, M., Williams, R.M., Jr., & Suchman, E.A. What college students think. New York: Van Nostrand, 1960.

McClelland, D., Baldwin, A.L., Bronfenbrenner, U., & Strodtbeck, F.L. Talent and Society. Princeton: Van Nostrand, 1958.

O'Connor, J.P. & Kinnane, J.F. A factor analysis of work values. Journal of counseling Psychology, 1961, 8, 263-267.

Spindler, G.D. Education in a transforming American culture. Harvard Educational Review, 1955, 25, 145-153.

Stroup, F. & Andrew, D.C. Barriers to college attendance. Magnolia, Arkansas: Southern State College, 1959.

Super, D.E. The structure of work values in relation to status, achievement, interests, and adjustment. Journal of Applied Psychology, 1962, 46, 231-239.

Tyler, L. E. & Sundberg, N. D. Factors affecting career choices of adolescents. Cooperative Research Project No. 2455. Eugene, Oregon: University of Oregon, 1964.